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ABSTRACT

The language and linguistics (Dewey 400's) collection in Brigham Young University Harold B. Lee Library was studied to determine rate of book loss. A random sample of 384 cards was drawn by a computer program from the shelf list of approximately 19,000 cards. The initial search for items in the stacks resulted in location of 254 items, or 91.56 percent of the sample. Circulation records accounted for an additional eight items. Six percent (twenty-two items) was statistically computed as the loss rate. The study concluded that the loss rate of 22.22 percent found by a previous study was less accurate because of the different method used, and that there is no indication of a special security problem in the 400's collection. (KP)

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APPLICATION OF A LOSS RATE DETERMINATION HEURISTIC

TO THE LANGUAGE AND LINGUISTICS COLLECTION

IN THE BRIGHAM YOUNG UNIVERSITY

HAROLD B. LEE LIBRARY

by

Glenn R. Lowry

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A Research Paper

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Chapter 1

THE PROBLEM

Statement of the Problem

What is the loss rate of materials from the 400's collection of the Lee Library?

Inclusions

This study determined a statistically estimated rate of loss for the 400's collection of the Lee Library.

Exclusions

This study did not attempt to ascertain an absolute loss rate for the 400's collection of the Lee Library. That could only be done by verification of the status of the entire 400's collection population of approximately 19,000 items.

Hypothesis

An earlier study indicated a loss rate of approximately 22.22% in the 400's collection of the Lee Library. The hypothesis utilized in the present study was that there was no difference between the loss rate for the 400's generated from a portion of a sample of the entire Lee Library collection and the loss rate established from a sample of the 400's portion of the collection only.

Definitions

Loss rate: the percentage of items of a given class that are no longer in the possession of the Lee Library due to loss or theft.

Sample: a representation of an entire population chosen at random.

Sample item: item selected as cognate with a random number used in the sample of the study. May be either a book or bound periodical.

Assumptions

For purposes of this study, it is assumed that if an item is not located in the stacks or in circulation records as currently checked out or as charged to the Reserve Library that item is lost.

While it is evident that items could be found in other areas of the library in which they do not belong, misplaced deliberately or carelessly, it is not possible to determine what items belong in this category. "Squirreling" of books in particular areas to avoid checking them out or simply removing them from the stacks and leaving them in some other area is likely to remain fairly constant over time and should not affect the study results appreciably. If an item is not available to a user for either of these or for similar reasons, the item is still "lost" for all intents and purposes.

It was also assumed that the application of statistical sampling methods make it possible to determine a usable loss estimate for the 400's collection of the Lee Library.

Chapter 2

LITERATURE SEARCH

A previous study by this researcher indicated an estimated loss rate of 22.22% in the 400's collection of the Lee Library.

While numerous books and periodical articles are available which deal with loss rate determination, the specificity of this study precluded their being of any particular use, necessitating the origination of the loss rate determination heuristic described in chapter 3.

Chapter 3

METHODOLOGY

The shelf list was used as best representing the collection because, while it represents all of the titles in it, it is limited to one entry per title.

It was determined at the beginning of the study on June 1, 1977, that the 400's collection portion of the shelf list is stored in 19 drawers.

It was determined that a level of significance of .05 with a confidence interval of .95 would be desirable for this study.

First, the appropriate drawers were identified by the labels affixed to them. These labels contain the call number range of the cards contained within them.

Next, it was necessary to determine the number of cards contained within each drawer. This was done by means of measurement using a ruler calibrated to 100ths of an inch. Each drawer was so measured. The commonly used standard for library catalog measurement is 100 cards per inch. Thus, the measurements, expressed in 100ths of an inch represented the actual count of cards in each drawer.

Following the measurement of cards contained within each of the 19 drawers, the total number of cards in all of those drawers was computed and a random sample of 384 items was drawn from the approximately 19,000 cards contained

within them. This was accomplished by inputting all of the drawer measurements, expressed in 100ths of an inch, into a computer file and processing these data by means of the DEC-10 computer and a program designed to sum the number of cards as though they were in one large drawer. Although it does this, the program also keeps track of the number of cards in each of the 19 drawers, remembering where one drawer begins and another ends in the combined "drawer."

After the cards have been thus combined, the program instructed the computer to generate a sample of 384 items from all of the cards. This number of items is the number which is necessary to insure the desired level of significance and confidence interval drawing from a population of 500,000 or more which was somewhat more than required for our population size of approximately 19,000 cards. When the sample items were selected, the program then instructed the computer to disassemble the imaginary "drawer" into its 19 component drawers. When doing so, the computer was also instructed to keep track of the location of the selected sample items in the 19 drawers.

Finally, the computer was programmed to designate the drawer and card number of each of the 384 sample items. This resulted in a printout which contained this information.

It was next necessary to return to the designated drawers and to locate the specified cards representing the 384 sample items. The cards within the drawers were compressed and the sample cards were located by finding the card which corresponded in position to the numeric equivalent of

the computer-generated random sample numbers.

As each card was located, the call number and author surname or the first word of a corporate author was noted. Each of the 384 sample items was thus identified.

The final phase of the data-gathering consisted of verification that each sample item either was or was not under the control of the library. In order to determine this, each item was first searched for in the stacks. Those items so located were noted. Those items not so located were searched for in the records of materials currently checked out in the circulation section of the library. Those records also contain records of items charged to the Reserve Library. Those items so found were noted, leaving a list of items which were missing. Those items determined as missing appear in Table 1.

The number of missing items was divided by the sample size of 384, producing the figure which represents the percentage of loss for the 400's collection of the Lee Library. This figure is presented in Chapter 4.

Chapter 4

ANALYSIS OF DATA

The initial search of the stacks resulted in the location of 354 items, representing 91.56% of the sample. The search of circulation records turned up 8 additional items which accounted for 362 items, 94.0% of the total of 384 sample items. Thus, 22 items, or 6.0% is the statistically computed loss rate for the 400's collection of the Lee Library.

The 22 items determined as missing by this study appear in Table 1 below.

Table 1
Items Determined as Lost
From 400's Collection
Of Lee Library

<u>Item</u>	<u>Call Number</u>	<u>Author</u>
1.	427	P35m Pei, M.
2.	428.1	At95 Atwood, E.
3.	438.242	Sc56c Schmidt-Ihms, M.
4.	448.242	B569b Bottke, K.
5.	463.1	L994p Lyon, J.
6.	487.383	H652p Hubbs, H.
7.	488.6	P652p Pindarus
8.	491.28642	H638s Hitopadesa
9.	491.7509	M289i Makeeva, V.
10.	492.4	Z65p Zimmermann, F.
11.	492.43	C212m Carmin, J.
12.	492.483	L233s Landes, G.

13.	494.5418243	G7571	Graf, A.
14.	495.1824	B292	Basic Chinese
15.	495.68242	B648j	Eorton, H.
*16.	495.922834	N499s	Nguyen-dihn
17.	496.05	L269j	Language Assn.
18.	496.9209	W587s	Whitney, W.
19.	497	G291n	Geoffroy, P.
20.	497.465	Ur3m	Uribe, C.
21.	499.96	K683k	Klimov, G.
22.	499.99	A128r	Alfandari, A.

*may also be 495.922824 as a "missing" card was found in circulation records for an item bearing this call number which had the same suthor and title as sample item.

Chapter 5

SUMMARY AND CONCLUSIONS

This study has established that the approximate loss rate for the 400's collection of the Lee Library was approximately 6.0% on June 6, 1977.

The hypothesis used in this study, that there was no significant difference between the loss rate for the 400's generated from a portion of a sample of the entire Lee Library collection and the loss rate established from a sample of the 400's portion of the collection only, was not supported. There is a significant difference in the former rate of 22.22% and the latter of 6.0%. While the former estimate did indicate that the 400's area was experiencing a loss rate higher than the 4.94% rate established in a previous study for the entire collection, that rate was actually only approximately 6.0%, or 1.06% higher than the average for the entire collection of the Lee Library. While this rate is slightly higher as noted, it is felt that the rates are close enough together that there is no indication of a special security problem in the 400's collection.

It is concluded that the original 22.22% estimate rate was distorted by the method used to establish that rate. That method was to divide the number of 400 class sample items appearing in the earlier sample, which was 9 items, into the number of items lost, which was 2, indicating the

loss rate for the 400's as 22.22%. It was noted in the previous study that these figures were only gross estimates based upon an insufficient sample, actually, upon a subsample, and were to be viewed as highly suspect.

It is recommended that similar studies be conducted in the future, thus isolating areas with abnormally high loss rates for further analysis and corrective action. Such follow-up studies should provide criteria by which the effectiveness of the 3M "Tattle Tape" system may be evaluated by management.